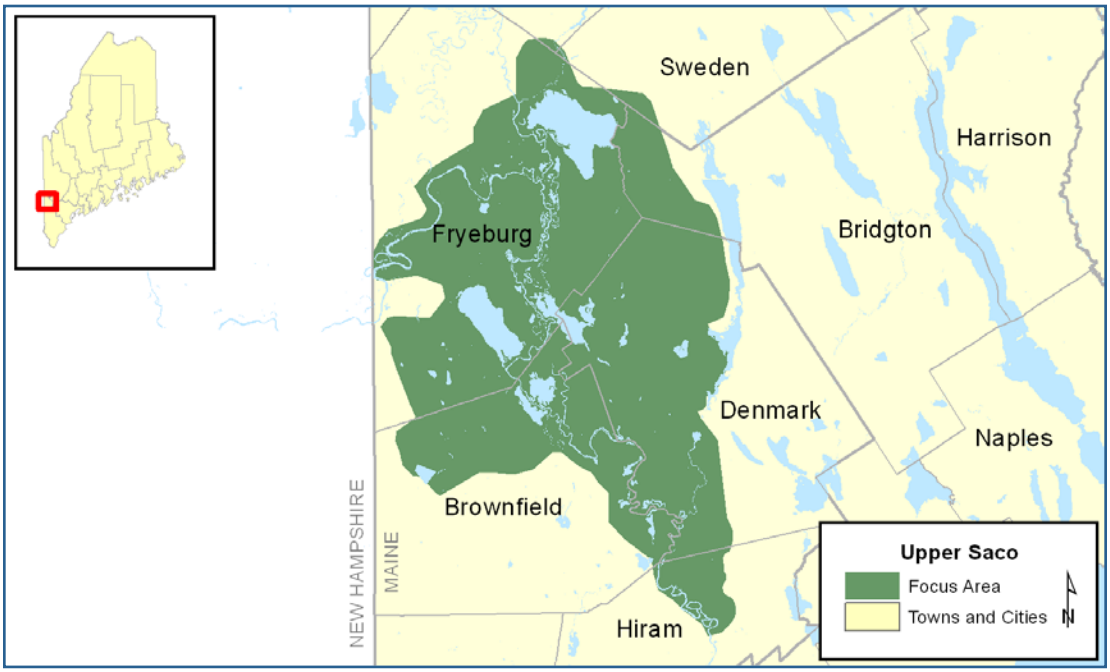
Beginning *with* HABITAT

Focus Areas of Statewide Ecological Significance

Upper Saco River



WHY IS THIS AREA SIGNIFICANT?

The Upper Saco River Focus Area is home to numerous rare species and natural communities, including one of the largest concentrations of the globally rare Long's bulrush (*Scirpus longii*), three globally rare dragonfly species, the globally rare river-wash barrens community, outstanding examples of floodplain forests, and at least ten other plant species that are rare in Maine. Rare animals in the Focus Area represent diverse taxonomic groups, such as birds, reptiles, odonates, and lepidopterans.

OPPORTUNITIES FOR CONSERVATION

- Work with willing landowners to permanently protect remaining undeveloped areas.
- Educate recreational users about ecological and economic benefits provided by the Focus Area.
- Protect wetlands from adverse effects of logging, land clearing, soil disturbance, new roads, and development on nearby uplands, which can result in greater runoff, sedimentation, and other non-point sources of pollution.

For more conservation opportunities, visit the Beginning with Habitat Online Toolbox: www.beginningwithhabitat.org/toolbox/about_toolbox.html.

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Rare Animals

Comet Darner
Lilypad Clubtail
Buckmoth
Sedge Wren
Wood Turtle
Rapids Clubtail
Cobra Clubtail
Barrens Itame
Twilight Moth
Boreal Snaketail
Pygmy Snaketail
New England Bluet
Extra-striped Snaketail
Spatterdock Darner
Southern Pygmy Clubtail
Huckleberry Sphinx
Common Sanddragon
Edwards' Hairstreak
Common Musk Turtle
Eastern Ribbon Snake
Ebony Boghaunter
Ringed Boghaunter
Similar Underwing
Acadian Swordgrass Moth
Pine Barrens Zanclognatha

Rare Plants

Secund Rush
Mountain-laurel
Dwarf Bulrush
Silverling
Fall Fimbry
Long's Bulrush
Smooth Rockcress
Ebony Spleenwort
Adder's Tongue Fern
Smooth Sandwort
Douglas' Knotweed
Blunt-lobed Woodsia
Fern-leaved False Foxglove
Hairy Wood Brome-grass
Ram's-head Lady's-slipper
Narrow-leaved Goldenrod

Rare and Exemplary Natural Communities

Riverwash Sand Barren
Pitch Pine Woodland
Oak–Pine Woodland
Oak–Ash Woodland
Hardwood Seepage Forest
Outwash Plain Pondshore
Pitch Pine–Scrub Oak Barren
Unpatterned Fen Ecosystem
Oak–Northern Hardwoods Forest
Silver Maple Floodplain Forest
Appalachian–Acadian Rivershore Ecosystem
Hemlock Forest
Tall Sedge Fen
Oak–Pine Forest
Pitch Pine Bog
Sweetgale Fen
Red Pine Woodland

Significant Wildlife Habitats

Inland Wading Bird & Waterfowl Habitat
Deer Wintering Area

Mike Lincoln

FOCUS AREA OVERVIEW

In Maine, the upper Saco River floodplain extends from the New Hampshire border to Hiram. This stretch of river supports a complex mosaic of diverse wetland communities. They constitute one of the most extensive and best remaining floodplain ecosystems in New Hampshire and Maine. The ecosystem includes floodplain forests, vernal pools, oxbow ponds, backwater sloughs, acidic fens, grassy swales, outwash plain pond shores, several large lakes, and the meandering river itself. Adjacent to the floodplain are upland communities such as mixed hardwood forests, low acidic summits, and globally rare pitch-pine/scrub oak forests.

The Focus Area supports numerous rare species, including one of the largest concentrations of the globally rare Long's bulrush (*Scirpus longii*), three globally rare dragonfly species, the globally rare river-wash barrens community, outstanding examples of floodplain forests, and at least ten other plant species that are rare in Maine. Rare animals in the Focus Area represent diverse taxonomic groups, such as odonates, lepidopterans, birds, and reptiles.

Ecological Services of the Focus Area
- Water-quality maintenance
- Flood protection for downstream areas
- Support for diverse and abundant wildlife

Economic Contributions of the Focus Area
- Commercial forestry
- Destination for hunting, fishing, hiking, paddling, and snowmobiling
- Aquifer supports bottled-water business

The magnitude, frequency, and duration of flooding appear to be the dominant natural processes that control the distribution and species composition of these wetland communities. Because so many of these natural processes have been altered, the New Hampshire Natural Heritage Program estimates a decline of over 95% of the floodplain forests in New Hampshire. Similar losses have likely occurred in Maine.

CHARACTERISTIC SPECIES

Edwards' Hairstreak

The Edwards' hairstreak is a small (1¼-inch), pale brown butterfly with a tiny tail on each hindwing. It occupies an extensive range from Texas to Quebec and Maine, where the species reaches its northeastern limit. In Maine, the Edwards' hairstreak has been found at only three sites in York County, including the towns of Fryeburg, Waterboro, and Shapleigh.

The Edwards' hairstreak inhabits only places where its host plant, scrub oak, grows in profusion. When the caterpillars are nearly full grown, they hide during the day in ant nests at the base of the host tree. In return for protecting the caterpillars, the ants feed on sugary secretions the caterpillars produce.

Perhaps the most important threat to the Edwards' hairstreak is limited habitat. There are only seven remaining pitch pine-scrub oak barrens in Maine, all located in the southwest part of the state. Formerly extending farther north along the coast, pine barrens were reduced to less than half of their historic acreage. Land development, sand and gravel extraction, timber harvesting, and fire suppression all contributed to the loss of pine barrens. In many areas, forest succession threatens to replace healthy scrub oak thickets with less disturbance-adapted species like red oak and white pine. Historically, fire played a major role in regenerating and maintaining extensive areas of pitch pine and scrub oak barrens. Aggressive fire suppression has reduced the natural role of fire in the pitch pine-scrub oak forest type in Maine and elsewhere in the northeast. The Edwards' hairstreak is also vulnerable to forest pesticide spraying for gypsy moth and other insect pests.

Ringed Boghaunter

The ringed boghaunter is a small dragonfly, only 1⅓ inches long, distinguished by a distinct orange ring on each black abdominal segment. It has a straw-yellow face, bright yellow mouthparts, and bluish-green eyes. The ringed boghaunter is one of the rarest dragonflies in North America. It is found in acidic fens, bogs, and small wetlands dominated by *Sphagnum*. Fewer than 60 populations are known, primarily in the northeast (Maine, Rhode Island, Connecticut, Massachusetts, New Jersey, and New Hampshire), but recently it has been discovered in Michigan and Wisconsin. The northern extent of its range is believed to be southwestern Maine, where it has been found at only six sites in York and southern Oxford Counties. Adults are typically observed in forested areas up to a mile from breeding wetlands. Here they forage on small insects and mature for a week or two before returning to the wetlands to breed. Adults bask near the ground in warm, sunny openings in the forest, along road edges, and on tree trunks or rocks. They are docile and easily approached, sometimes landing on people.

Loss and degradation of breeding wetlands and surrounding forests from development, roads, utility rights-of-way, and water-level manipulations have resulted in extirpation or decline of populations in the northeast. Point and non-point sources of pollution (e.g., agricultural and residential lawn fertilizers and chemicals), siltation, and filling of small wetlands degrade water quality and boghaunter habitat. Use of broad-spectrum pesticides (e.g., for gypsy moth or mosquito control) directly affects boghaunters and their insect food supply. The ringed boghaunter was listed as state endangered in Maine in 1997 because of its extreme rarity and the vulnerability of its habitat to development. Conservation of the ringed boghaunter requires protecting both breeding wetlands and adjacent forested uplands, especially those areas within 600 feet of breeding wetlands. Many breeding wetlands are less than an acre in size and may be overlooked during routine municipal or state

Top: An Edwards' hairstreak butterfly. *Phillip deMaynadier*
Above: A mating pair of ringed boghaunters. *Jason Forbes*

environmental permit review. Data on known locations are available from the Maine Department of Inland Fisheries and Wildlife. The habitat is best protected by preserving wetlands and adjacent forested upland by acquisition and easement, landowner outreach, and land-use regulations.

NATURAL COMMUNITIES

Silver Maple Floodplain Forest

Silver maple floodplain forests occur in fine, silty soils on the flanks of the river. Silver maple is the dominant tree, sometimes accompanied by a few red maple or American elm. Widely spaced trees, many with multiple trunks, give a park-like feeling. The understory is open with sparse shrubs. Herbaceous plants such as sensitive fern and spring ephemerals grow densely on the ground. The northern waterthrush, barred owl, belted kingfisher, bank swallow, and green heron are associates of this community type. In the southern part of the state, the Louisiana waterthrush and yellow-throated vireo are likely associates if the canopy is closed or nearly so. The silver-haired bat often roosts in riparian habitats in trees with loose bark. The rare wood turtle overwinters in river channels and forages in floodplain forests, and it may feed on amphibian egg masses in isolated pools within such forests. With little market for silver maple, until recently, these forests often were left undisturbed. The market for hardwood pulp, however, is a potential threat to this forest type. Several of the known sites in Maine are formally protected from forestry and other forms of land conversion. Exotic plant species, which may displace plants native to Maine, also represent a threat to these forests.

Pitch Pine–Scrub Oak Barrens

Pitch pine–scrub oak barrens occur on sandy outwash deposits. They have patchy vegetation in which pitch pine is the dominant tree. A dense shrub/sapling layer of scrub oak and/or gray birch typically grows in canopy openings. The low layer of heath shrubs is dominated by lowbush blueberry, with bracken fern and woodland sedge as characteristic herbs. Mosses are virtually absent. Soils tend to be excessively drained and accumulate very little organic matter. Fire is an important factor in maintaining this community, and most sites have a history of periodic fires. Fires eliminate competing tree species and prevent succession to an oak–pine forest. Because of fire suppression in the last century, this community type has become very rare. Relatively large areas are required to maintain this dynamic community and its associated rare animal species. Most of the large sites in the state have been fragmented by permanent conversion to residential areas or to sand and gravel pits. Birds such as the whip-poor-will, eastern towhee, pine warbler, and prairie warbler may prefer this open habitat. The barrens host a rich array of rare butterflies and moths, many of which use pitch pine as their larval host plant.

Outwash Plain Pondshore

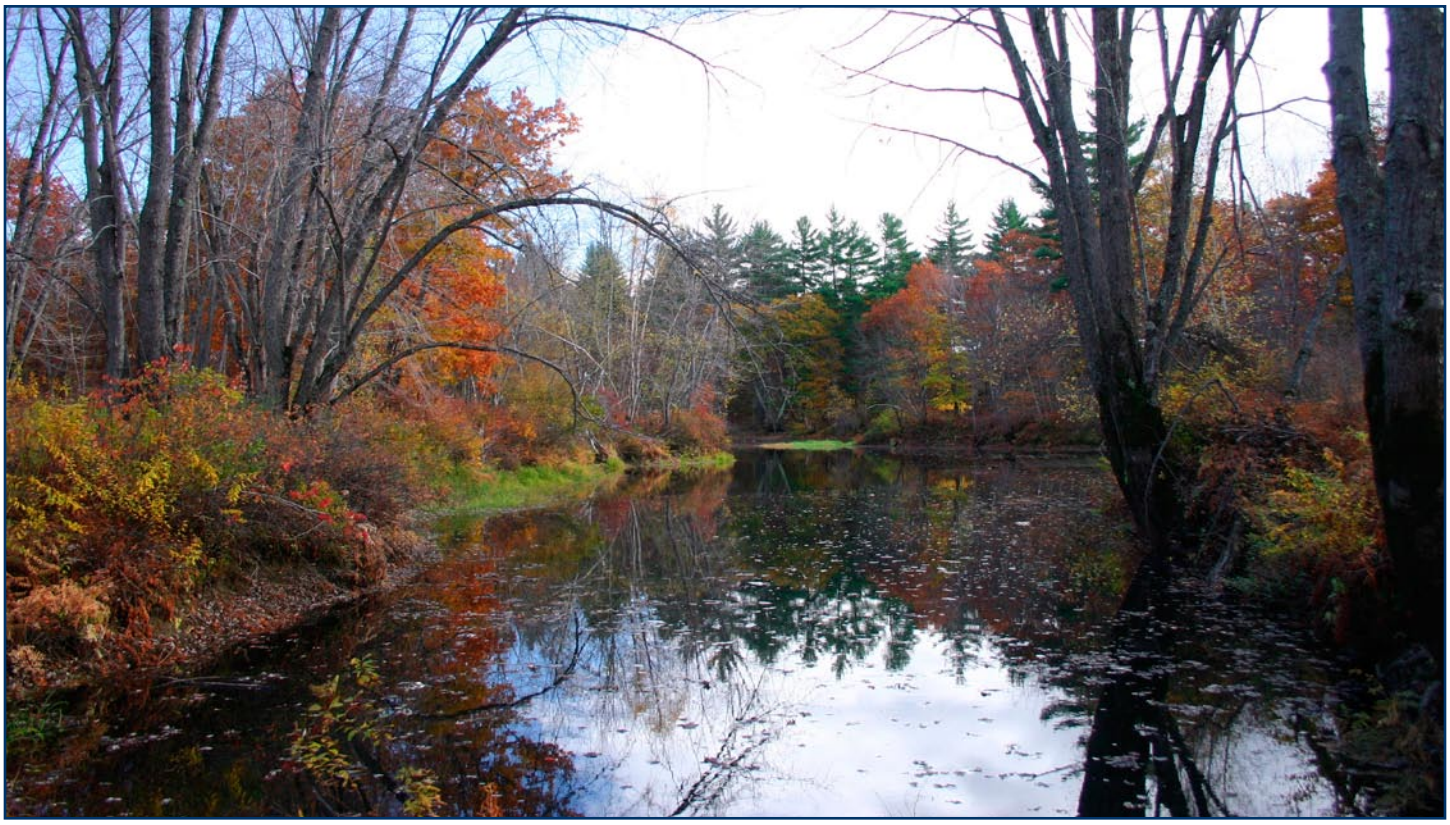
The natural community known as three-way sedge-goldenrod outwash plain pondshore is composed of concentric zones

Eric Jalbert

of herbs around shallow, sandy-bottomed ponds in outwash plains, whose shores are inundated for part of the growing season and exposed for part of the growing season. A band of shrubs (e.g., highbush blueberry, maleberry, buttonbush, leatherleaf) is typical at the upland edge. The next lower zone is dominated by narrow-leaved goldenrod and three-way sedge; golden-pert and meadow beauty are characteristic. The lowest zone, exposed less frequently than those above, is dominated by pipewort and spikerush.

Ironwood–Oak–Ash Woodland

The Focus Area has several sites that support good-quality examples of the ironwood–oak–ash woodland natural community type. These woodlands occur on the upper portions of steep, south-facing slopes on several of the mountains. Sections of these steep slopes have calcium-enriched rock outcrops near their summits and talus scattered on the slopes below. Ironwood–oak–ash woodlands typically have open canopies that allow an abundance of light to reach the understory and ground layer. Ironwood and red oak are the most common trees mixed with the occasional white ash, basswood, sugar maple, white pine, and red cedar. Poor growing conditions due to droughty soils or possibly past fires have helped to keep the trees in this habitat type spread out and stunted. The herb layer features plant species typical of moderately enriched sites, such as herb robert, hepatica, and wild licorice. Vegetation may be patchy, developing in pockets among the rocks, or more continuous along upper slopes and ridges. In general, these natural communities have not been harvested for timber, most likely due of the poor quality of the trees and/or the steepness of slopes where they occur.



Mike Lincoln

CONSERVATION CONSIDERATIONS

» Hydrologic alteration may arise from aquifer withdrawals, dams, canal construction, poor forestry practices, development in the watershed, and stream channelization. Historically, for example, canal construction shortened the course of the Saco River and drained several large ponds, causing major changes to the hydrologic regime. These changes altered the natural communities within the floodplain.

» Pine barrens tend to change into other forest types unless managed burns or other appopriate management actions are conducted. One consequence would be a decline in the butterfly and moth species that depend on pine barrens.

» Poorly planned residential development in the Focus Area may lead to irreversible impacts on natural systems. Roads and land conversion cause loss of habitats and diminish the wildlife value of remaining habitat patches. Another consequence of residential development is often the proliferation of invasive plants.

» Proper timber management can regenerate some types of natural communities and protect vernal pools.

» Maintaining hydrology and water quality is essential for the health of wetland systems. Logging, land clearing, soil disturbance, new roads, and development on buffering uplands can result in greater runoff, sedimentation, and other non-point pollution.

Public Access Opportunities

» Pleasant Mountain Preserve

» Swan's Falls Campground

» Brownfield Bog Wildlife Management Area

» Preserving natural communities and other sensitive features often can be accomplished most effectively by conserving the larger natural systems in which these features occur. Conserving the larger systems helps ensure that both common and rare natural features will persist.

» Conservation planning for uplands should include areas set aside from timber harvest to allow for unmanaged forests.

» It is important to guide off-road vehicle (ORV) use to areas where it is most appropriate and to limit access in more sensitive areas.

For more information about Focus Areas of Statewide Ecological Significance, including a list of Focus Areas and an explanation of selection criteria, visit **www.beginningwithhabitat.org**

RARE SPECIES AND EXEMPLARY NATURAL COMMUNITIES OF THE FOCUS AREA

	Common Name	Scientific Name	State Status*	State Rarity Rank	Global Rarity Rank
Animals	Spatterdock Darner	*Aeshna mutata*	SC	n/a	G4
	Comet Darner	*Anax longipes*	SC	n/a	G5
	Lilypad Clubtail	*Arigomphus furcifer*	SC	S2	G5
	Similar Underwing	*Catocala similis*	SC	S2S3	G5
	Sedge Wren	*Cistothorus platensis*	E	S1	G5
	New England Bluet	*Enallagma laterale*	n/a	S3	G3G4
	Wood Turtle	*Glyptemys insculpta*	SC	S4	G4
	Rapids Clubtail	*Gomphus quadricolor*	E	S1	G3G4
	Cobra Clubtail	*Gomphus vastus*	SC	S1S2	G5
	Buckmoth	*Hemileuca maia maia*	SC	S1	G5
	Barrens Itame	*Itame sp. 1 nr. inextricata*	SC	S1	G3G4
	Southern Pygmy Clubtail	*Lanthus vernalis*	SC	S1S2	G4
	Twilight Moth	*Lycia rachelae*	T	S1	G4
	Extra-striped Snaketail	*Ophiogomphus anomalus*	n/a	S4	G4
	Boreal Snaketail	*Ophiogomphus colubrinus*	T	S1	G5
	Pygmy Snaketail	*Ophiogomphus howei*	SC	S2S3	G3
	Huckleberry Sphinx	*Paonias astylus*	SC	S3	G4G5
	Common Sanddragon	*Progomphus obscurus*	SC	S1S2	G5
	Edwards' Hairstreak	*Satyrium edwardsii*	E	S1	G4
	Common Musk Turtle	*Sternotherus odoratus*	n/a	S3	G5
	Eastern Ribbon Snake	*Thamnophis sauritus*	SC	S3	G5
	Ebony Boghaunter	*Williamsonia fletcheri*	T	S3	G4
	Ringed Boghaunter	*Williamsonia lintneri*	T	S1	G3
	Acadian Swordgrass Moth	*Xylena thoracica*	SC	S3	G4
	Pine Barrens Zanclognatha	*Zanclognatha martha*	T	S1	G4
Plants	Smooth Rockcress	*Arabis laevigata*	T	S1	G5
	Ebony Spleenwort	*Asplenium platyneuron*	SC	S2	G5
	Fern-leaved False Foxglove	*Aureolaria pedicularia*	SC	S3	G5
	Hairy Wood Brome-grass	*Bromus pubescens*	SC	S2	G5
	Ram's-head Lady's-slipper	*Cypripedium arietinum*	E	S1	G3
	Narrow-leaved Goldenrod	*Euthamia tenuifolia var. tenuifolia*	T	S2	G5
	Fall Fimbry	*Fimbristylis autumnalis*	T	S2S3	G5
	Secund Rush	*Juncus secundus*	T	S1	G5?
	Mountain-laurel	*Kalmia latifolia*	SC	S2	G5
	Dwarf Bulrush	*Lipocarpha micrantha*	T	S1	G5
	Smooth Sandwort	*Minuartia glabra*	SC	S3	G4
	Adder's Tongue Fern	*Ophioglossum pusillum*	SC	S1	G5
	Silverling	*Paronychia argyrocoma*	T	S1	G4
	Douglas' Knotweed	*Polygonum douglasii*	SC	S2	G5
	Long's Bulrush	*Scirpus longii*	T	S2	G2G3
	Blunt-lobed Woodsia	*Woodsia obtusa*	T	S1	G5

Natural Communities

Common Name	Scientific Name	State Status*	State Rarity Rank	Global Rarity Rank
Appalachian–Acadian Rivershore Ecosystem	Appalachian–Acadian Rivershore Ecosystem		n/a	n/a
Hardwood Seepage Forest	Hardwood Seepage Forest		S3	n/a
Hemlock Forest	Hemlock Forest		S4	G4G5
Riverwash Sand Barren	Hudsonia River Beach		S1	G1
Oak–Ash Woodland	Ironwood–Oak–Ash Woodland		S3	G3G5
Tall Sedge Fen	Mixed Tall Sedge Fen		S4	G4G5
Oak–Pine Forest	Oak–Pine Forest		S4	G5
Oak–Pine Woodland	Oak–Pine Woodland		S4	G3G5
Pitch Pine–Scrub Oak Barren	Pitch Pine–Scrub Oak Barren		S2	G2
Pitch Pine Bog	Pitch Pine Bog		S2	G3G5
Pitch Pine Woodland	Pitch Pine Woodland		S3	G2
Oak–Northern Hardwoods Forest	Red Oak–Northern Hardwoods Forest		S4	n/a
Red Pine Woodland	Red Pine Woodland		S3	G3G5
Silver Maple Floodplain Forest	Silver Maple Floodplain Forest		S3	n/a
Sweetgale Fen	Sweetgale Mixed Shrub Fen		S4	G4G5
Outwash Plain Pondshore	Three-way Sedge–Goldenrod Outwash Plain Pondshore		S1	G2G3
Unpatterned Fen Ecosystem	Unpatterned Fen Ecosystem		S4	n/a

State Status*

- E — Endangered: Rare and in danger of being lost from the state in the foreseeable future, or federally listed as Endangered.
- T — Threatened: Rare and, with further decline, could become endangered; or federally listed as Threatened.
- SC — Special Concern: Rare in Maine, based on available information, but not sufficiently rare to be Threatened or Endangered.

**State status rankings are not assigned to natural communities.*

State Rarity Rank

- S1 — Critically imperiled in Maine because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres).
- S2 — Imperiled in Maine because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- S3 — Rare in Maine (on the order of 20–100 occurrences).
- S4 — Apparently secure in Maine.
- S5 — Demonstrably secure in Maine.

Global Rarity Rank

- G1 — Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation.
- G2 — Globally imperiled because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- G3 — Globally rare (on the order of 20–100 occurrences).
- G4 — Apparently secure globally.
- G5 — Demonstrably secure globally.